through portions of the optical member where the light-shielding ink used for printing is illuminated. This recitation corresponds to the disclosure at lines 7-11 of page 9 in the specification. Claims 44 and 47 have been similarly amended.

Claims 10, 40-42, 44, 47, 51, 52, 56, 57, 61, 62, 66 and 67 have been objected to in that there is insufficient antecedent basis for the terms "the portions", "the optical system", "the pattern", "the mask", "the light flux", "the wafer", and "the projection optical system". These claims have been amended to correct the informalities noted by the Examiner.

In view of the foregoing, it is believed that Claims 10, 40-42, 44, 47, 51, 52, 56, 57, 61, 62, 66 and 67 as amended fully meet the requirements of 35 U.S.C. § 112, second paragraph.

Claims 1, 3, 13-16, 19-23, 26, 28, 37-42 and 48-67 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 3,563,743 (Cook). Claims 7, 43 and 44 depending from Claim 1 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Cook in view of Official Notice that it is well known in the art to put alignment markings on the periphery of optical elements to enable alignment of the optical element with an optical system. With regard to the claims as amended by this amendment, these rejections are respectfully traversed.

Independent Claim 1 as amended by this amendment is directed to a transparent type optical element having a reflection preventive light-shielding member that includes a metal at the periphery of an effective area of the optical element. The light is transmitted through the effective area.

In Applicants' view, Cook discloses a process for preparing a reflection replica for use in an optical processing system in which the replica is obtained by coating a flat reflective surface with a photosensitive plastic material and then exposing the coated surface to light that passes through both a transparent display of an information-containing pattern and a light-diffusing screen, such as a halftone screen. The photosensitive coating is then developed so that the portion of the photosensitive coating that remains is permeated by irregularities corresponding to the screen pattern.

According to the invention of Claim 1 as amended by this amendment, an optical element is a transparent type in which light is transmitted through the optical element effective area and reflections are prevented by a light-shielding metal member at the effective area periphery. In Cook, after development of an information bearing and halftone screen exposed coated surface, the remaining areas are provided with a nonreflective coating. Cook, however, requires that an irregular pattern corresponding to the halftone screen be formed as shown in Fig. 4 to prevent reflection light from the coated area from becoming incident on the information bearing area. Accordingly, it is not seen that Cook's structure of an irregular pattern could possibly teach the reflection prevention features of Claim 1.

In contrast to the light transmitting effective area and reflection preventive light-shielding periphery of the transparent type optical element Claim 1, Cook only teaches a reflective type element and is devoid of any suggestion of a transparent optical element through which light is transmitted. Further, the result of the Cook process is a reflective type information bearing structure which is completely different from the light transmitting transparent type optical element of Claim 1. In view of the foregoing, it is

believed that Claim 1 as amended by this amendment is completely distinguished from Cook and is allowable.

Independent Claims 13, 15, 19, 21 and 23 as amended by this amendment are directed to a transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the effective area. The light is transmitted through the effective area. In Claim 13, the reflection preventive light-shielding area blocks UV light and generates no undesirable substances due to UV light radiation. In Claim 15, The reflection preventive light-shielding area blocks radiation energy and generates no undesirable substances when irradiated. In Claim 19, the reflection preventive light-shielding area blocks UV light and is resistant to the UV light. In Claim 21, the reflection preventive light-shielding area blocks radiation energy and is resistant to the radiation energy and, in Claim 23, the reflection preventive light-shielding member includes an inorganic material at the periphery of the optical element.

Independent Claims 58 and 63 as amended by this amendment are directed to an optical element having a reflection preventive light-shielding area or member at the periphery of an effective area of the optical element. The optical element is a transparent type and penetrates the light incident on the effective area.

In Accordance with Claims 13, 15, 19, 21, 23, 58 and 63, a transparent type optical element has an effective area and a reflection preventive light-shielding in the periphery of the effective area and transmits light through the effective area or penetrates light incident on the effective area. As discussed with respect to Claim 1, Cook is restricted to an information bearing reflective type structure that is completely distinguished from the transparent type optical element of the present invention.

The Cook arrangement as disclosed at lines 47-54 of Column 2, requires that the "nonreflective" periphery coating have an irregular pattern formed through use of a halftone screen so that the pattern of irregularities causes coherent light rays to be diffracted outside the range of a filter that is disposed on the Fourier plane to avoid having the remaining light diminished by reflections from the remaining coated area. Further, Cook requires that the center part of his reflective type optical element have recorded seismic information that is illuminated to form a Fraunhofer diffraction pattern which is directed away from and incompatible with the transparent type optical element of Claims 13, 15, 19, 21, 23, 58 and 63.

It is a further feature of Claims 13 and 19 that the reflection preventive light-shielding area blocks UV light, generates no undesirable substances due to UV light radiation and is resistant to the UV light. Claims 15 and 21 have the further feature of the reflection preventive light-shielding area blocking radiation energy, generating no undesirable substances when irradiated and being resistant to the radiation energy. Claim 23 provides the additional feature that the reflection preventive light-shielding member includes an inorganic material at the periphery of the optical element. Cook's reflection type structure adapted to reflect an information bearing coating on a base member is directed away from and devoid of any suggestion of these features. Accordingly, it is believed that Claims 13, 15, 19, 21, 23, 58 and 63 as amended by this amendment are completely distinguished from Cook and are allowable.

Independent Claims 48 and 53 as amended by this amendment are directed to a diffractive optical element having a light-shielding area at a periphery of an effective area of the diffractive optical element. In Claim 48, the optical element has an alignment

mark in an area where the light is shielded by the light shielding area. In Claim 53, the optical element has an alignment mark in the light shielding area.

It is a feature of Claims 48 and 53 as amended by this amendment that a diffractive optical element has an alignment mark in the light shielding area or the area where the light shielding member shields from the light. Cook fails to teach or suggest use of an alignment mark in his information read out arrangement and there is no disclosure regarding the alignment mark and positioning of optical elements when reading out the information. Accordingly, it is believed that there is no motivation in Cook to suggest using an alignment mark to an information reading structure. Further, use of an alignment mark could not possibly be compatible with Cook's requirement for a coating permeated by irregularities corresponding to a halftone screen. It is therefore believed that Claims 48 and 53 as amended by this amendment are completely distinguished from Cook and are allowable.

Claims 4-6, 11, 12, 17, 18, 24, 29-36, 37/4, 37/12 and 27/17 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Cook. Claims 45-47 depending from Claim 4 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Cook in view of Official Notice that it is well known in the art to put alignment markings on the periphery of optical elements to enable alignment of the optical element with an optical system. With regard to the claims as amended by this amendment, these rejections are respectfully traversed.

Independent Claim 4 as amended by this amendment is directed to a transparent type optical element provided with a reflection preventive light-shielding

member that includes a ceramic material at the periphery of an effective area of the optical element. Light is transmitted through the effective area.

It is a feature of Claim 4 that a transparent type optical element having an effective area through which light is transmitted also has a ceramic material reflection preventive light-shielding member. As discussed with respect to Claims 1, 13, 15, 19, 21, 23, 48, 53, 58 and 63, Cook is restricted to teaching an information bearing reflective type structure wherein the center part of his reflective type optical element has recorded seismic information that is illuminated to form a Fraunhofer diffraction pattern. Accordingly, it is not seen that Cook's reflective information reading arrangement could possibly suggest the transparent type optical element of the present invention. It is therefore believed that Claim 4 as amended by this amendment is completely distinguished from Cook and is allowable.

Independent Claims 11 and 17 as amended by this amendment are directed to a transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the effective area. Light is transmitted through the effective area. In Claim 11, the reflection preventive light-shielding area blocks UV laser light with a wavelength of 250 nm or less and generates no undesirable substances when irradiated by laser light. In Claim 17, the reflection preventive light-shielding area blocks UV laser light with a wavelength of 250 nm or less and is resistant to the laser light.

It is a feature of Claims 11 and 17 as amended by this amendment that light is transmitted through an effective area of a transparent type optical element having a peripheral reflection preventive light-shielding area. As discussed with respect to Claim 4, Cook only teaches an information bearing reflective type structure wherein the center part

of his reflective type optical element has recorded seismic information that is illuminated to form a Fraunhofer diffraction pattern. As a result, Cook's structure fails to suggest transmitting of light through the effective area of a transparent type optical element as in Claims 11 and 17.

Further, Cook is devoid of any suggestion of the features of Claims 11 and 17 of reflection preventive light-shielding areas that block UV laser light with a wavelength of 250 nm or less and generate no undesirable substances when irradiated by laser light or are resistant to the laser light. It is therefore not seen that Cook could possibly suggest the features of Claims 11 and 17 and it is believed that Claims 11 and 17 are completely distinguished from Cook and are allowable.

Claims 8-10, 37/8 and 43-47 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Cook in view of Official Notice that it is well known in the art to put alignment markings on the periphery of optical elements to enable alignment of the optical element with an optical system.

Independent Claim 8 as amended by this amendment is directed to a transparent type optical element provided with a reflection preventive light-shielding member composed of a light-shielding ink and an alignment mark at the periphery of the optical element. Light is transmitted through the effective area of the optical element.

As aforementioned, Cook requires teaches an information bearing reflective type structure from which recorded seismic information is read. Accordingly, Cook's structure could not possibly suggest transmitting of light through the effective area of a transparent type optical element as in Claim 8. Further, Cook is devoid of any suggestion of a light-shielding ink being employed as a preventive light-shielding member or of the

feature of an alignment mark in the peripheral light-shielding ink. While alignment marks may be well known in the art, such an alignment mark is completely incompatible with Cook's required irregular pattern to prevent reflection light from the coated area from becoming incident on the information bearing area. Accordingly, it is not seen that Cook's information reflecting structure with an irregular patterned periphery could possibly suggest the features of a light transmitting effective area of a transparent type optical element and a peripheral light-shielding ink with an alignment mark of Claim 8. It is therefore believed that Claim 8 as amended by this amendment is completely distinguished from Cook and the Official Notice and is allowable.

Newly added Claims 68-70 depend from Claims 1, 4, 8, 11, 13, 15, 17, 19, 23, 48, 53, 58 and 63 and include further features disclosed in the specification. No new matter is believed to have been added.

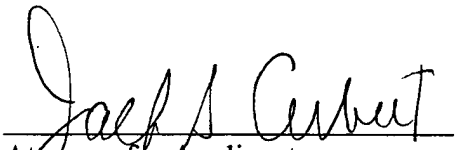
A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record. Applicants submit that the amendments to independent Claims 1, 4, 8, 11, 13, 15, 17, 19, 21, 23, 48, 53, 58 and 63 clarify Applicants' invention and serve to reduce any issues for appeal.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable consideration and reconsideration and early passage to issue of the present application. The Examiner is respectfully requested to enter this Amendment After Final Action under 37 C.F.R. § 1.116.

Applicants' attorney, Steven E. Warner, may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



Attorney for Applicants
Jack S. Cubert
Registration No. 24,245

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO THE CLAIMS

1. (Twice Amended) [An] A transparent type optical element comprises a reflection preventive light-shielding member comprising a metal at the periphery of an effective area of the optical element,

wherein said light is transmitted through said effective area.

4. (Twice Amended) [An] A transparent type optical element provided with a reflection preventive light-shielding member comprising a ceramic material at the periphery of an effective area of the optical element,

wherein said light is transmitted through said effective area.

8. (Twice Amended) [An] A transparent type optical element provided with a reflection preventive light-shielding member composed of a light-shielding ink and an alignment mark at the periphery of the optical element,

wherein said light is transmitted through an effective area of the optical element.

10. (Amended) An optical member according to Claim 9, wherein [the] light does not protrude through portions of the optical member where the light-shielding ink used for printing is illuminated [does not protrude].

11. (Twice Amended) [An] A transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the effective area, the reflection preventive light-shielding area blocking UV-laser light with a wavelength of 250 nm or less and generating no undesirable substances when irradiated by laser light,

wherein said light is transmitted through said effective area.

13. (Twice Amended) [An] A transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the effective area, the reflection preventive light-shielding area blocking UV light and generating no undesirable substances due to irradiation by the UV light,

wherein said light is transmitted through said effective area.

15. (Twice Amended) [An] A transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the

effective area, the reflection preventive light-shielding area blocking radiation energy and generating no undesirable substances when irradiated,

wherein said light is transmitted through said effective area.

17. (Twice Amended) [An] A transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the effective area, the reflection preventive light-shielding area blocking UV laser light with a wavelength of 250 nm or less and being resistant to the laser light,

wherein said light is transmitted through said effective area.

19. (Twice Amended) [An] A transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the effective area, the reflection preventive light-shielding area blocking UV light and being resistant to the UV light,

wherein said light is transmitted through said effective area.

21. (Twice Amended) [An] A transparent type optical element provided with an effective area and a reflection preventive light-shielding area in the periphery of the effective area, the reflection preventive light-shielding area blocking radiation energy and being resistant to the radiation energy,

wherein said light is transmitted through said effective area.

23. (Twice Amended) [An] A transparent type optical element provided with an effective area and a reflection preventive light-shielding member comprising an inorganic material at the periphery of an optical element,

wherein said light is transmitted through said effective area.

37. (Twice Amended) An element according to any one of Claims 1, 4, 8, 11, 13, 15, 17, 19, 21 and 23, wherein [a diffractive surface is formed in] said effective area is the center part of said optical element and in said center part the diffraction grating is formed.

40. (Twice Amended) An illumination apparatus illuminating a face utilizing [the] an optical system containing the optical element according to any one of Claims 1, 4, 8, 11, 13, 15, 17, 19, 21 and 23.

41. (Twice Amended) A projection exposure apparatus for illuminating a pattern on a first subject by taking advantage of a light flux via [the] a projection optical system containing the optical element according to any one of Claims 1, 4, 8, 11, 13, 15, 17, 19, 21 and 23, thereby projecting and exposing the pattern on the first subject on a substrate face with the projection optical system.

42. (Twice Amended) A method for manufacturing a device, wherein [the] a pattern on [the] a mask is illuminated by taking advantage of the light flux via [the] an optical system containing the optical element according to any one of Claims 1, 4, 8, 11, 13, 15, 17, 19, 21 and 23, the device being manufactured via a development step after exposing [the] a wafer face with the pattern.

44. (Amended) An optical element according to Claim 43, wherein [the] light does not protrude through portions of the optical member where [the] a light-shielding ink used for printing is illuminated [does not protrude].

47. (Amended) An optical element according to Claim 46, wherein [the] light does not protrude through portions of the optical member where [the] a light-shielding ink used for printing is illuminated [does not protrude].

48. (Amended) A diffractive optical element comprising a light-shielding area at [the] a periphery of an effective area of the diffractive optical element,

wherein said optical element has an alignment mark in an area where the light is shielded by said light shielding area.

51. (Amended) A projection exposure apparatus for illuminating a pattern on a first subject by taking advantage of a light flux via [the] a projection optical system containing the optical element according to Claim 48, thereby projecting and exposing the pattern on the first subject on a substrate face with the projection optical system.

52. (Amended) A method for manufacturing a device, wherein a pattern on a mask is illuminated by taking advantage of [the] a light flux via [the] an optical system containing the optical element according to Claim 48, the device being manufactured via a development step after exposing [the] a wafer face with the pattern.

53. (Amended) A diffractive optical element comprising a light-shielding [member] area at a periphery of an effective area of the diffractive optical element,

wherein said optical element has an alignment mark in said light shielding area.

56. (Amended) A projection exposure apparatus for illuminating a pattern on a first subject by taking advantage of a light flux via [the] a projection optical system containing the optical element according to Claim 53, thereby projecting and exposing the pattern on the first subject on a substrate face with the projection optical system.

57. (Amended) A method for manufacturing a device, wherein a pattern on a mask is illuminated by taking advantage of [the] a light flux via [the] an optical system containing the optical element according to Claim 53, the device being manufactured via a development step after exposing [the] a wafer face with the pattern.

58. (Amended) An optical element comprising a reflection preventive light-shielding area at a periphery of an effective area of the optical element,

wherein said optical element is a transparent type and incident light penetrates said effective area.

59. (Amended) An optical system having [the] a diffractive optical element according to Claim 58.

61. (Amended) A projection exposure apparatus for illuminating a pattern on a first subject by taking advantage of a light flux via [the] an optical system containing the optical element according to Claim 58, thereby projecting and exposing the pattern on the first subject on a substrate face with [the] a projection optical system.

62. (Amended) A method for manufacturing a device, wherein a pattern on a mask is illuminated by taking advantage of [the] light flux via [the] an optical system containing

the optical element according to Claim 58, the device being manufactured via a development step after exposing [the] a wafer face with the pattern.

63. (Amended) [A diffractive] An optical element comprising a reflection preventive light-shielding member at a periphery of an effective area of the [diffractive] optical element,

wherein said optical element is a transparent type and incident light penetrates said effective area.

64. (Amended) An optical system having the [diffractive] an optical element according to Claim 63.

66. (Amended) A projection exposure apparatus for illuminating a pattern on a first subject by taking advantage of a light flux via [the] a projection optical system containing the optical element according to Claim 63, thereby projecting and exposing the pattern on the first subject on a substrate face with the projection optical system.

67. (Amended) A method for manufacturing a device, wherein a pattern on a mask is illuminated by taking advantage of [the] a light flux via [the] an optical system

containing the optical element according to Claim 63, the device being manufactured via a development step after exposing [the] a wafer face with the pattern.

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